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BREVETS
—
MARQUES
DE COMMERCE
—
DROITS
D'AUTEUR
—
DESSINS
INDUSTRIELS
—
TOPOGRAPHIES
DE CIRCUITS
INTÉGRÉS

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(19) (CA) **CANADIAN PATENT** (12)

(54) Bakery Goods and Process for their Manufacture

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ABSTRACT OF THE DISCLOSURE

Baked goods containing sugar, flour and/or other starch components, egg, powder and fat components, based upon a watery sugar solution is produced by the following production steps:

(a) preparation of a solution of H_2O , sugar and kitchen salt in a mode already being known as such; (b) dry premixing of flour and/or other starch components, egg powder, leaven and aromatic substances, and (c) addition of the premix described under

(b) above to the solution obtained as described under (a) above while, at the same time, adding the fat components under constant stirring until a homogeneous dough is obtained, and

(d) baking the dough at temperatures between 150 - and 220°C until it is done, showing a residual moisture content between 18% and 22%.

Baked Goods and Process of Manufacturing Same

Description

- 5 The invention relates to Baked Goods containing sugar, flour and/or other starch components, egg powder and fat components initially being based on a watery sugar solution, as well as to a process of producing said goods. In particular, the invention relates to a process of producing so-called "Viennese Mass" on a large-scale industrial basis.
- 10 In common practice, "Viennese Mass" is industrially produced in a process where, initially, sugar is dissolved in water and the watery sugar solution thus obtained is used to dissolve also the protein-containing ingredients i.e. egg powders in particular. The mass thus obtained is then mixed with the fat or the shortening as well as with the flour. This process requires relatively long
- 15 mixing periods of some 5 minutes at temperatures between 30 and 35°C in order to get the sugar dissolved in the water. Then the admixture of protein carriers such as egg powders requires another stirring period of some 10 minutes whereupon the additional ingredients like fats, wheat flour, Lactovit* etc. are admixed to the mass and the whole dough is kneaded again for
- 20 another 10 to 15 minutes. This way a total stirring time of at least 25 minutes is required.

One disadvantage of this process is seen in the fact that flour and other starch components will absorb quite an amount of water when being admixed to the mass and thus make it difficult for the resulting dough to be kneaded

25 thoroughly. In more recent time the physiological nutritional aspects have

* Trademark



made it desirable to enrich baked goods with ingredients such as wheat bran. Wheat bran, however, is especially inclined to absorb any present water in large quantities only to release it rather slowly in the subsequent baking process.

5 Wheat bran furthermore contains lipolytic enzymes which normally precludes such brand from being used in connection with fat-containing baked goods such as "Viennese Mass". It is necessary, therefore, to eliminate to a vast degree the water adsorption of the wheat bran in order to eliminate also the bran's lipolytic activity.

10 It is the object of the present invention to make available baked goods produced by means of a process requiring significantly less stirring/kneading periods than the ones encountered heretofore; it is furthermore intended with said process to permit the use of starch components such as wheat bran with the mass without having said bran taking up too much water i.e. moisture in
15 the process; the sequence of the production steps required for the production of the baked goods is also designed to eliminate to a vast degree the lipolytic activity of said bran. Furthermore it is intended to make available baked goods offering a shelf life over extended periods of time without the need of any preservatives being added.

20 The objectives described above are attained, according to the invention, by means of the Baked Goods previously mentioned which are produced in the following sequence of production steps:

- (a) Preparation of a solution of H_2O , sugar and kitchen salt in a mode already being known as such;

- (b) Dry premixing of flour and/or other starch components, egg powder, leaven and aromates, and
- (c) Addition of the premix described under (b) above to the solution obtained as described under (a) above while, at the same time, adding the fat components under constant stirring until a homogeneous dough mass is obtained, and
- (d) Baking the dough at temperatures between 150°C and 220°C until it is done, showing a residual moisture content between 18% and 22%.

According to the invention the step (a) of producing the Baked Goods involves a stirring of 5 minutes in order to dissolve, in a mode already known as such, the sugar and common salt in the amount of water needed for the dough, which is done preferably at a temperature of 40°C.

In contrast to the production steps used heretofore the invention specifies the dry premixture of the flour and/or the other starch components, the egg powder, the leaven and the aromatic substances. Production step (c) requires this dry premix to be admixed to the solution obtained under production step (a) while, at the same time, stirring the fat components into the mixture. Said stirring is continued until a homogeneous dough is obtained. This stirring, as a rule, will require periods of 10 to 15 minutes at a preferred temperature between 30 to 35°C.

The homogeneous dough thus obtained is then deposited on a baking plate and, in production step (d), baked to finish at temperatures between 150°C and 220°C until a residual humidity content of 18 to 22% - preferably 18% to 20%. It is recommended to carry out this baking process by means of having the dough pass through at least one and up to four different temperature

zones.

5 According to the invention it is preferred to substitute part of the contents of flour by starch components. The components especially suited for this process are wheat bran, preferredly toasted wheat bran, and rye malt powder. Said share of wheat brand and/or rye malt powder may go up to 100%; the preferred range is between 30% and 80% and especially preferred is a share of 50%.

10 The additional components admixed in production step (b) include auxiliary materials and aromatic substances, e.g. Colco*, Nutex*, Lactovit and leavening agents.

The fat components to be admixed may consist of shortenings commonly used in baking and of butter. Especially suitable are liquid fats i.e. peanut oil in particular.

15 The egg powder especially suitable is whole egg powder which may be enriched by a share of egg yolk powder if desired.

20 The finished baked product contains a residual moisture between 18% and 22%; preferred is a range between 18% and 20% and especially preferred a content of 19%. It shows a water activity of 0.5 to 0.8 and yet possesses an extended shelf life from 50 up to 90 days without any preservatives having been added.

The example set forth hereunder is meant to describe the invention without the latter being limited to such description.

* Trademark

Example of Practical Execution

Production step (a):

5 The weight-defined shares of sugar, water and salt are introduced into the dissolving vessel. Said vessel is double-walled, heatable by means of 801-type water and fitted with a stirring apparatus. All elements of this equipment consist of stainless V2A-type steel. The ingredients mentioned before are heated under stirring to a temperature of up to 40°C until sugar and salt have been completely dissolved.

10 Such solution may also be prepared in advance as stock for subsequent mixing.

15 The quantity of this solution prescribed by the recipe is then pumped into the actual mixing vessel. This mixing vessel is also double-walled, heatable with 801-type water, fitted with a planetary paddle mixer and made entirely from stainless steel including all input and output pipes. The planetary paddle mixer may be set at two different speeds, i.e. a) 35/87.5 RPM and b) 70/175 RPM, respectively.

Production step (b):

20 The powdered dry ingredients such as flour, egg yolk powder, whole egg powder, toasted wheat bran (Cruschello* medio), Lactovit, rye malt powder, baking powder, ammonium carbonate and vanillin are premixed without any liquids.

* Trademark

Production step (c):

5 The dry premix obtained in production step (b) is then stirred into the solution prepared in production step (a). Immediately after the dry components are added there will also be the admixture of the weight-defined portions of Colco, Nutex and orange essence; the entire dough is continued to be kneaded by means of the planetary paddle mixer until a smooth and lump-free mixture is obtained. At the same time the fat components i.e. preferably peanut oil are admixed. The stirring period of this production step takes about 10 to 15 minutes.

10 The intensity of the stirring is set at a suitable speed to avoid the forming of lumps. The temperature of the mixed dough thus obtained will be about 32°C +/- 2°C. Said temperature is the accumulated result of the temperature of the solution prepared at production step (a) and of the temperature of the ingredients admixed at production step (c). Depending on the temperature of
15 these ingredients the final temperature of the dough is determined by means of the solution temperature from step (a). Minor adjustments may be achieved with the help of the indirect heating system of the mixing vessel.

Production step (d):

20 The dough thus obtained has a specific gravity between 0.95 and 1.10 and is subsequently pumped into the buffer vessel in front of the baking oven. This buffer vessel is of identical design as the mixing vessel but is fitted with a slower mixing paddle which keeps the dough in motion. Here again the temperature is kept at 32°C.

From the buffer vessel the dough is pumped into the baking trough as needed. The input pipe is provided with a sieve to remove any lumps or foreign matter. The end piece of the input pipe is moving constantly from the left to the right of the baking trough providing an even distribution of the dough over the entire width of it and thus eliminating the forming of excess dough on the outer flanks of the trough. The thickness of the layer of the dough thus applied is about 2 mm and may be preset manually by means of a finely adjustable skimming system. Said thickness is determined in accordance with the desired thickness of the finished product.

The dough thus applied to the steel conveyor is then run through the baking oven the interior of which has been subdivided into two zones of temperature which may be preset separately. The heating of the baking oven follows the well-known hot air circulating system. On principle it is possible to subdivide the baking oven into up to four different baking zones; the individual temperatures and number of zones depend on the passage speed of the dough.

The interior temperature of the product in the baking process must reach a minimum of 95°C.

The residual moisture content of the baked product is 19% +/- 1%; the thickness of the baked-to-finish product is 3.5 mm +/- 0.1 mm, and the specific gravity is 0.37 +/- 0.01.

In the present example and at a conveyor speed of 3m/min the baking temperatures are as follows:

In the first zone: 150°C at the top; 210°C at the bottom

In the second zone: 220°C at the top; 220°C at the bottom

5 In the present example the baked good thus obtained represents a semi-finished product; after having left the baking oven it is removed from the steel conveyor by means of a stripping system. In this phase of the process the bottom skin formed in the baking must remain at the steel conveyor and may not stay attached to the product. A subsequent cleaning process will remove said baking skin from the steel conveyor and discard it.

10 The baked product is then transported by means of a chain conveyor to a sterile-air-conditioned zone and allowed to cool off there.

After being run over a special roller to be turned over the continuous biscuit web is cut into strips of desired width which are forwarded to be applied with the desired quantity of filling creme.

The technical specifications of the finished baked product thus obtained are shown in the table hereunder:

Table of Specifications

Features	'Viennese Mass'			'Viennese Mass'		
	before baking			baked to finish		

pH-value	7.0	-	7.3	7.3	-	7.7
Water content	39.0%	-	42.0%	18.0%	-	20.0%
Protein (total)	6.0%	-	7.0%	6.5%	-	8.5%
Fat (total)	14.0%	-	16.0%	16.0%	-	18.0%
Viscosity 351 *	2.5M	-	3.6M			N.A.
Viscosity 251 *	3.7M	-	4.2M			N.A.
AW-value	0.92	-	0.95	0.75	-	0.80
Density	0.99	+/-0.02				
Saccharose				15.0	-	17.0%
Penetrometrics		N.A.		** 0.4	-	0.7mm
Inerts		N.A.				3.5%

Note: * Brookfield™ spindle RV6; speed 50
 ** Penetrometrie SUR - PNR 8 test stamp
 Total weight 215g (Deutsche Prufvor-
 schrift 18.242.1)

CLAIMS

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1 1. A method of producing baked goods from sugar, flour and or
2 alternatively other starch components, egg powder and fat components, and
3 an aqueous sugar solution by means of the following sequence of production
4 steps:

- 5 (a) Preparation of a solution of water, sugar and salt;
6 (b) Dry premixing of flour and any other starch components,
7 egg powder, raising agents and flavouring materials;
8 (c) Addition of the premix from (b) to the solution from (a)
9 while, at the same time, adding the fat components with
10 constant stirring until a homogeneous dough is obtained;
11 and
12 (d) Baking the dough at from 150° to 220°C the baked
13 product having a residual moisture content from 18% to
14 22% by weight.

1 2. Method according to claim 1 wherein the egg powder consists of
2 whole egg powder and or alternatively egg yolk powder.

1 3. Method according to claim 1 wherein the starch components used
2 in the process consist of wheat bran and or alternatively rye malt powder.

1 4. Method according to claim 3 wherein toasted wheat bran is used.

1 5. Method according to any one of claims 1, 2 or 3 wherein
2 additional process materials and flavouring ingredients are added at production
3 step (c).

1 6. Method according to claim 5 wherein Colco™, Nutex™ and or
2 alternatively Lactovit™ is added at production step (c).

1 7. Method according to any one of claims 1, 2 or 3 wherein the fat
2 components added are in a liquid state.

1 8. Method according to claim 7 wherein peanut oil is added.

1 9. Method according to any one of claims 1, 2 or 3 wherein the
2 residual moisture content is from 18 to 20% by weight.

1 10. A method according to any one of claims 1, 2 or 3 wherein the
2 solution of step (a) is stirred for about five minutes and the stirring period of
3 step (c) is from 10 to 15 minutes.

1 11. A method according to any one of claims 1, 2 or 3 wherein the
2 temperature is maintained in step (a) at about 40°C and at production step (c)
3 from 30 to 35°C.

1 12. A method according to any one of claims 1, 2 or 3 wherein the
2 bake-to-finish process of step (d) is carried out in two separate zones the
3 temperatures of which are 150° to 210°C and to 20°C, respectively.

1 13. Baked goods when produced by a method as claimed in any one
2 of claims 1 to 13.

